

CLAIMS

1. An electronic camera apparatus, comprising:
 - an electronic optical sensing apparatus, said electronic optical sensing apparatus sensing optical images and converting sensed images to an electronic signal;
 - a buffer memory;
 - a video storage medium interface for storing video images captured by said optical sensing apparatus on a storage medium; and
 - a controller which operates said electronic camera apparatus in at least one mode, said at least one mode including a first mode wherein said controller concurrently causes said video storage medium interface to store motion video captured by said optical sensing apparatus on a video storage medium at a first resolution, and to temporarily store video frames captured by said optical sensing apparatus in said buffer memory, and responsive to a first user command, saves at least one frame from said buffer memory in a persistent form at a second resolution, said second resolution being finer than said first resolution.
2. The electronic camera apparatus of claim 1, wherein said electronic optical sensing apparatus, said buffer memory, said video storage medium and said controller are mounted within a common hand-held camera housing.
3. The electronic camera apparatus of claim 1, wherein said electronic optical sensing apparatus is mounted in a housing remote from said buffer memory, said video storage medium and said controller.
4. The electronic camera apparatus of claim 1, wherein said controller comprises a programmable processor executing a control program for controlling the operation of said electronic camera apparatus.

1 5. The electronic camera apparatus of claim 1, wherein said optical sensing
2 apparatus comprises a charge-coupled device (CCD) array.

1 6. The electronic camera apparatus of claim 1, wherein said controller operating in
2 said first mode stores each video frame captured by said optical sensing apparatus in said
3 buffer during a respective temporary period.

1 7. The electronic camera apparatus of claim 1, wherein said controller operating in
2 said first mode stores every Nth video frame captured by said optical sensing apparatus in
3 said buffer during a respective temporary period, where $N > 1$.

1 8. The electronic camera apparatus of claim 7, wherein N is a user-selectable
2 parameter.

1 9. The electronic camera apparatus of claim 1, wherein said buffer is organized as at
2 least one circular buffer in which the oldest stored frame is overwritten with a new frame
3 when the new frame is captured.

1 10. The electronic camera apparatus of claim 9, wherein said buffer is organized as a
2 plurality of circular buffers, each circular buffer storing frames at a respective resolution,
3 a first circular buffer storing frames at a higher resolution than a second circular buffer.

1 11. The electronic camera apparatus of claim 1, wherein a resolution of frames stored
2 in said buffer is a user-selectable parameter.

1 12. The electronic camera apparatus of claim 1, wherein said controller, responsive to
2 said first user command, saves the entire contents of said buffer memory in a persistent
3 form at said second resolution.

1 13. The electronic camera apparatus of claim 1, wherein said controller, responsive to
2 said first user command, saves a fixed portion of the contents of said buffer memory in a
3 persistent form at said second resolution, said fixed portion being less than all of the
4 buffer contents.

1 14. The electronic camera apparatus of claim 1, wherein said controller, responsive to
2 said first user command, saves a user-selectable portion of the contents of said buffer
3 memory in a persistent form at said second resolution, said user-selectable portion being
4 potentially less than all of the buffer contents.

1 15. The electronic camera apparatus of claim 14, wherein said user-selectable portion
2 of the contents of said buffer is determined by playing the contents of said buffer
3 backwards to the user on a display of said camera, and receiving a user selection
4 corresponding to a beginning frame to be saved in said persistent form.

1 16. A method for operating an electronic camera apparatus, comprising the steps of:
2 capturing a sequence of optical images with an electronic optical sensing
3 apparatus;
4 storing motion video images from said sequence of optical images on a motion
5 video storage medium at a first resolution;
6 temporarily storing image data from said sequence of optical images in a buffer,
7 said step of temporarily storing image data being performed concurrently with said step of
8 storing motion video images; and
9 responsive to a user command, saving at least some images from said buffer in a
10 persistent form at a second resolution, said second resolution being finer than said first
11 resolution.

1 17. The method for operating an electronic camera apparatus of claim 16, wherein
2 each video frame captured by said optical sensing apparatus is stored in said buffer during
3 a respective temporary period.

1 18. The method for operating an electronic camera apparatus of claim 16, wherein
2 every Nth video frame captured by said optical sensing apparatus is stored in said buffer
3 during a respective temporary period, where $N > 1$.

1 19. The method for operating an electronic camera apparatus of claim 18, wherein N
2 is a user-selectable parameter.

1 20. The method for operating an electronic camera apparatus of claim 16, wherein
2 said buffer is organized as at least one circular buffer in which the oldest stored frame is
3 overwritten with a new frame when the new frame is captured.

1 21. The method for operating an electronic camera apparatus of claim 20, wherein
2 said buffer is organized as a plurality of circular buffers, each circular buffer storing
3 frames at a respective resolution, a first circular buffer storing frames at a higher
4 resolution than a second circular buffer.

1 22. The method for operating an electronic camera apparatus of claim 16, wherein a
2 resolution of frames stored in said buffer is a user-selectable parameter.

1 23. The method for operating an electronic camera apparatus of claim 16, wherein
2 said step of saving at least some images from said buffer in a persistent form comprises
3 saving the entire contents of said buffer memory in a persistent form at said second
4 resolution.

1 24. The method for operating an electronic camera apparatus of claim 16, wherein
2 said step of saving at least some images from said buffer in a persistent form comprises
3 saving a fixed portion of the contents of said buffer memory in a persistent form at said
4 second resolution, said fixed portion being less than all of the buffer contents.

1 25. The method for operating an electronic camera apparatus of claim 16, wherein
2 said step of saving at least some images from said buffer in a persistent form comprises
3 saving a user-selectable portion of the contents of said buffer memory in a persistent form
4 at said second resolution, said user-selectable portion being potentially less than all of the
5 buffer contents.

1 26. The method for operating an electronic camera apparatus of claim 25, wherein
2 said user-selectable portion of the contents of said buffer is determined by playing the
3 contents of said buffer backwards to the user on a display of said camera, and receiving a
4 user selection corresponding to a beginning frame to be saved in said persistent form.

1 27. A method for operating an electronic camera apparatus, comprising the steps of:
2 capturing a continuous stream of optical images with an electronic optical sensing
3 apparatus;
4 temporarily storing image data from said continuous stream of optical images in a
5 circular buffer, said circular buffer being continuously overwritten by new image data
6 from said continuous stream of optical images;
7 responsive to a user command, saving at least some image data from said buffer in
8 a persistent form.

1 28. The method for operating an electronic camera apparatus of claim 27, wherein
2 said step of saving at least some image data from said buffer in a persistent form saves at
3 least some frames at a first resolution, said method further comprising the step of:

4 storing motion video from said continuous stream of optical images on a motion
5 video storage medium at a second resolution, said first resolution being finer than said
6 second resolution, said storing motion video step being performed concurrently with said
7 temporarily storing image data step.

1 29. The method for operating an electronic camera apparatus of claim 27, wherein
2 every Nth video frame captured by said optical sensing apparatus is stored in said circular
3 buffer during a respective temporary period.

1 30. The method for operating an electronic camera apparatus of claim 29, wherein N
2 is a user-selectable parameter, at least one user-selectable value of N being greater than 1.

1 31. The method for operating an electronic camera apparatus of claim 27, wherein
2 said step of saving at least some image data from said buffer in a persistent form
3 comprises saving a fixed portion of said buffer memory in a persistent form.

1 32. The method for operating an electronic camera apparatus of claim 27, wherein
2 said step of saving at least some image data from said buffer in a persistent form
3 comprises saving a user-selectable portion of the contents of said buffer memory in a
4 persistent form, said user-selectable portion being potentially less than all of the buffer
5 contents.

1 33. The method of operating an electronic camera apparatus of claim 32, wherein said
2 user-selectable portion of the contents of said buffer is determined by playing the contents
3 of said buffer backwards to the user on a display of said camera, and receiving a user
4 selection corresponding to a beginning frame to be saved in said persistent form.

1 34. A program product for controlling the operation of an electronic camera
2 apparatus, said electronic camera apparatus having an electronic optical sensing apparatus
3 for sensing optical images and converting sensed images to an electronic signal, said
4 program product comprising a plurality of processor executable instructions recorded on
5 signal-bearing media, wherein said instructions, when executed by at least one
6 programmable processor of said electronic camera apparatus, cause the apparatus to
7 perform the steps of:

8 capturing a sequence of optical images with said electronic optical sensing
9 apparatus;

10 storing motion video images from said sequence of optical images on a motion
11 video storage medium at a first resolution;

12 temporarily storing image data from said sequence of optical images in a buffer,
13 said step of temporarily storing image data being performed concurrently with said step of
14 storing motion video images; and

15 responsive to a user command, saving at least some images from said buffer in a
16 persistent form at a second resolution, said second resolution being finer than said first
17 resolution.